I claim:

1. An anastomosis device for joining a vein graft to an aorta wall, comprising:

means to produce an opening in an aorta wall, said means comprising in combination a punch assembly and a cutting sleeve assembly disposed within a central bore of a housing;

a lateral shaft obliquely connected to said housing, said lateral shaft having a lateral bore communicating with said central bore;

wherein said lateral shaft is adapted to receive a vein graft such that said vein graft may be advanced through said lateral bore, said central bore and said opening in said aorta wall for joining to said aorta wall.

2. The device of claim 1, further comprising means to seal said opening in said aorta wall after said opening is produced and during said advancement of said vein graft in order to prevent loss of blood.

3. The device of claim 2, wherein said cutting sleeve comprises a distal portion and a proximal portion, and wherein said punch assembly and said proximal portion of said cutting sleeve is retractable, and wherein said lateral bore freely communicates with said central bore when said punch assembly and said proximal portion of said cutting sleeve is retracted.

4. The device of claim 3, wherein said punch assembly and said portion of said cutting sleeve retain a portion of said aorta wall removed to create said opening when said punch assembly and said proximal portion of said cutting sleeve are retracted.

5. The device of claim 4, wherein said means to seal said opening in said aorta wall comprises said distal portion of said cutting sleeve.

6. The device of claim 5, said cutting sleeve assembly further comprising means to advance said cutting sleeve relative to said punch assembly for producing said opening in said aorta wall.

7. The device of claim 6, wherein said housing comprises a proximal portion and a distal portion, said proximal portion being separable from said distal portion and retractable in order to retract said punch assembly and said proximal portion of said cutting sleeve.

8. The device of claim 7, said lateral shaft further comprising a cap member adapted to receive a balloon catheter therethrough.

9. An anastomosis device for joining a vein graft to an aorta wall comprising:

an elongated housing comprising a central bore;

an annular cutting sleeve assembly disposed within said central bore, wherein at least a portion of said cutting sleeve assembly is retractable relative to at least a portion of said housing;

a retractable punch assembly disposed within said cutting sleeve assembly, wherein said punch assembly is retractable relative to at least a portion of said housing;

a lateral shaft obliquely joined to said housing and comprising a lateral bore;

wherein said retractable portion of said cutting sleeve assembly and said retractable punch assembly are retractable beyond said lateral bore such that said lateral bore is in communication with said central bore when said retractable portion of said cutting sleeve assembly and said retractable punch assembly are retracted, whereby a vein graft may be advanced through said lateral bore and said central bore.

10. The device of claim 9, said cutting sleeve assembly further comprising a distal portion and a proximal portion, such that only said proximal portion is retractable.

11. The device of claim 10, further comprising means to advance said cutting sleeve assembly relative to said punch assembly.

12. The device of claim 11, said housing further comprising a distal portion and a proximal

portion, said proximal portion being separable from said distal portion.

13. The device of claim 12, further comprising a balloon catheter, and wherein said lateral shaft further comprises a cap member adapted to receive said balloon catheter therethrough.

14. A method of performing anastomosis of a vein graft to an aorta wall comprising the steps of:

providing an anastomosis device comprising a punch assembly having a punch head and a cutting sleeve disposed in a central bore, and a lateral shaft having a lateral bore communicating with said central bore, said lateral bore adapted to receive a vein graft;

inserting a vein graft into said lateral bore;

inserting said punch head into said aorta wall;

advancing said cutting sleeve to against said punch head to create an opening in said aorta wall;

retracting said punch head and at least a portion of said cutting sleeve proximally beyond said lateral bore, while leaving a portion of said anastomosis device disposed within said opening to prevent blood loss;

advancing said vein graft through said central bore and into said opening in said aorta wall;

securing said vein graft to said aorta wall; and

removing said anastomosis device from said opening and from said vein graft.

15. The method of claim 14, further comprising providing a balloon catheter within said lateral bore, whereby said vein graft is advanced into said opening by advancing said balloon catheter.

16. The method of claim 15, whereby said step of retracting said punch head and at least a portion of said cutting sleeve proximally beyond said lateral bore is accomplished by separating a proximal portion of said anastomosis device from a distal portion of said anastomosis device.